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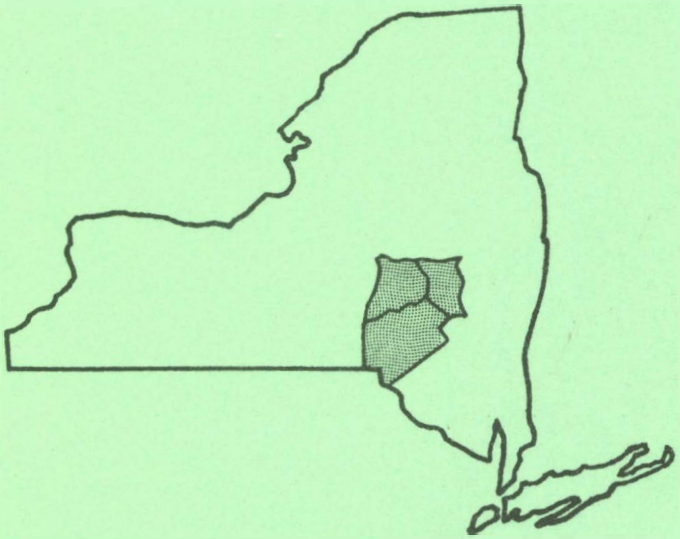
RESEARCH

Forest Statistics for

NEW YORK

Forest District No. 1

(Revised)



Forest Statistics Series:
New York No. 16

Northeastern Forest Experiment Station

Upper Darby, Pennsylvania
Ralph W. Marquis, Director

1954

United States Department of Agriculture • Forest Service

FOREWORD

Results of the forest survey for New York Forest District No. 1 were originally published in June 1951. Afterwards some changes were made in forest-survey definitions, and later information was obtained on public forest-land ownership and farm-woodland acreage. Because of this, the forest-survey data for Forest District No. 1 have been revised. The revised figures, contained in this report, supersede the figures contained in the earlier report.

This report is a product of the forest survey of the Northeast, carried on by the Northeastern Forest Experiment Station as part of the nationwide forest survey being made by the Forest Service, U. S. Department of Agriculture.

Similar reports have been published for the other forest districts in the State of New York. The primary purpose of these reports is to provide basic forest statistics for the administrative use of the New York Department of Conservation.

The New York Department of Conservation aided the Northeastern Station greatly in the forest survey of the State. The Department not only provided the aerial photographs used in the survey, but also cooperated in many other phases of the work.

Field work in Forest District No. 1 was supervised by Harry W. Camp, Jr. The statistical procedures for obtaining field-inventory data were developed by C. Allen Bickford. Computations were made under the supervision of Roland H. Ferguson.

Ralph W. Marquis

Ralph W. Marquis
Director

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FOREST STATISTICS FOR

NEW YORK FOREST DISTRICT NO. 1

Prepared by

Division of Forest Economics

Northeastern Forest Experiment Station
Forest Service U S Dept Agriculture

GENERAL

New York's Forest District No. 1 contains three counties (Delaware, Otsego, and Schoharie) located in the southeastern part of the State.

Otsego County and the northern part of the other two counties lie in the Appalachian Plateau. This is open, rolling, dairy country--an important part of New York City's milkshed. It is extensively farmed and contains most of the larger population centers in the district.

Here the valleys and gently rolling slopes are used for crops and pasture. The steeper slopes and hills and ridges are covered with forest. The forests are generally small. Seen from the air, the pattern is a lacework of forests on open farm land.

The southern and eastern parts of Delaware and Schoharie Counties lie in the Catskill Mountains. Here the valleys are narrower, the slopes steeper. The forests are more extensive. Summer homes and winter sports attract vacationers to this section.

Forest Area

The three counties in Forest District No. 1 contain almost 2 million acres. Less than half of this, 892,000 acres, is forest land.

Some 41,400 acres are reserved from commercial timber use. Of this, 33,800 acres are in the State Forest Preserve.[1] All the rest of the forest land is classed as commercial, including public lands such as Bear Spring Mountain Game Refuge and State Forests.[2]

This commercial forest land totals 850,800 acres. Of this, 448,500 acres are in Delaware County, 222,100 acres in Otsego County, and 180,200 acres in Schoharie County.

Ownership

More than 90 percent of the commercial forest land in Forest District No. 1--that is, forest land not reserved from commercial timber use--is privately owned. Some 370 thousand acres of this forest land are on farm properties. Of the 400 thousand acres held by other private owners, some is owned by estates, railroads, and utility companies. Much of it is on abandoned farms that have been bought by summer residents or local people other than farmers. There are no large forest-industry holdings in the district.

About three-fourths of the 80,000 acres of publicly owned commercial forest land in the district are held by the State of New York as State Forests. The Federal Government owns no forest land in the district.

Forest Types

The predominant forest type in the district is northern hardwoods: sugar maple-beech-yellow birch. This type, which covers extensive areas in the Northeast, is potentially one of the country's most valuable types. In Delaware and Otsego Counties it occupies nearly the entire forested area.

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[1] THE STATE FOREST PRESERVE COMPRISES LAND OWNED BY THE STATE IN THE 4 FOREST PRESERVE COUNTIES OF THE CATSKILLS AS DEFINED BY LAW.

[2] OUTSIDE THE LIMITS OF THE ADIRONDACK AND CATSKILL PARKS AND NOT SUBJECT TO THE CONSTITUTIONAL PROHIBITION AGAINST CUTTING, WHICH APPLIES TO THE STATE FOREST PRESERVE LANDS.

In Schoharie County, however, oak types cover about one-third of the forest land. Slightly less than one-third is occupied by white pine and hemlock. The remainder is in northern hardwoods and miscellaneous forest types.

Forest Stands

About 60 percent of the merchantable sawlog material is found on less than one-fifth of the commercial forest land. This is the land that carries 5,000 or more board feet per acre.

On the other four-fifths of the commercial forest land most of the stands are run down. Their growing stock is depleted as a result of continued high-grading--cutting the better trees and leaving the inferior trees in possession of the land. Many acres have been stripped for acid wood. Poorly stocked seedling-and-sapling stands and areas less than 10 percent stocked cover more than 100,000 acres.

Timber Volume

Forest District No. 1 contains more than 2 billion board feet of sawlog material in sawtimber trees. Four-fifths of this material is hardwood. The leading species are sugar maple (31 percent), beech (14 percent) and hemlock (14 percent).

All merchantable trees 5 inches and larger in diameter (including the sawlog material mentioned above) contain a total net volume of 834 million cubic feet. (Including bark, the cubic volume equals some 10 million standard cords.) More than half of this volume is found in pole trees. Poor cutting practices account for this lack of balance between components of the growing stock.

In using these volume estimates, please bear in mind that some of this so-called "merchantable" timber currently cannot be logged economically. Topography, prices and markets, species, quality, and volume per acre have to be considered, because these are factors that help determine whether you can cut timber for a profit. For example, light sawtimber stands can seldom be cut for factory sawlogs at a profit. But for pulpwood they may be attractive logging chances.

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Table 1.--Land area by major classes, 1949

Class of land[1]	Area	
	Acres	Percent
Forest land:		
Commercial	850,800	43
Noncommercial[2]	41,400	2
All forest land	892,200	45
Nonforest land	1,096,900	55
All land[3]	1,989,100	100

[1]See Appendix for definitions.

[2]Includes 33,787.33 acres in the State Forest Preserve, 1,469 acres in Gilbert Lake State Park, and 6,100 acres of municipal (New York City) forest land reserved from timber cutting. State ownership figures are as of September 30, 1952.

[3]Census of Agriculture, 1950. Water areas of 1 to 40 acres are included in the estimate of nonforest acreage.

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Table 2.--Commercial forest-land area by ownership, 1949

Ownership class	Acreage held	
	Acres	Percent
Private:		
Farm forest land[1]	372,100	44
Other private	398,600	47
Total private	770,700	91
Public:		
State[2]	74,100	8
County	4,100	1
Municipal	1,900	(3/)
Total public	80,100	9
All ownerships	850,800	100

[1] Census of Agriculture, 1950.

[2] Includes commercial forest land administered by the New York State Conservation Department as State Forests and Game Management Areas, amounting to 59,733.63 and 14,421.48 acres respectively. All State ownership figures are as of September 30, 1952.

[3] Less than 1 percent.

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Table 3.--Commercial forest-land area by forest type, 1949

Forest type	Area	
	Acres	Percent
Hemlock	54,900	6
White pine	51,000	6
White pine-hardwood	29,200	3
Spruce-fir and hardwood-spruce-fir	12,600	2
Sugar maple-beech-yellow birch	519,100	62
Aspen-gray birch	26,400	3
Paper birch	9,000	1
Ash-elm-maple and bottomland hardwood	20,400	2
Oak-white pine	50,500	6
Red oak	41,800	5
White oak	25,300	3
Chestnut oak	10,600	1
All types	850,800	100

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Table 4.--Commercial forest-land area by forest-type group and stand-size class, 1949

Forest-type group	Sawtimber stands		Pole-timber stands	Other stands[1]
	More than 5,000 bd.ft. per acre	1,500-5,000 bd.ft. per acre		
	Acres	Acres	Acres	Acres
Softwood types[2]	31,200	42,500	35,800	38,200
Sugar maple-beech-yellow birch	101,700	170,500	203,200	43,700
Oak types	9,400	38,500	56,300	24,000
Other hardwood types	12,300	13,600	24,600	5,300
All types	154,600	265,100	319,900	111,200
Percent	18	30	37	15

[1]Includes 28,700 acres of seedling-and-sapling stands that are 10-39 percent stocked and 42,700 acres of forest land that are less than 10 percent stocked.

[2]Includes a small acreage of hardwood-spruce-fir.

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Table 5.--Commercial forest-land area by stand-size class and watershed, 1949

Stand-size class	Watershed			Total
	Delaware River	Mohawk[1] River	Susquehanna River	
	Acres	Acres	Acres	Acres
Sawtimber stands:				
More than 5,000 board feet per acre	62,100	33,200	59,300	154,600
1,500 to 5,000 board feet per acre	100,000	63,100	102,000	265,100
Poletimber stands:				
More than 600 cubic feet per acre	165,200	35,600	42,600	243,400
200 to 600 cubic feet per acre	25,000	19,800	31,700	76,500
Seedling-and-sapling stands and other areas	20,700	60,400	30,100	111,200
Total	373,000	212,100	265,700	850,800
Percent	44	24	32	100

[1]Includes 8,900 acres of the Hudson River watershed.

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Table 6.--Net volume of live timber on commercial forest land by species, 1949

Species	Growing stock[1]		Saw-timber[2]
	Thousand cu.ft.	Equivalent in cords	Thousand bd.ft.
Hemlock	86,400	1,080,000	292,800
White pine	45,800	572,500	170,700
Other softwoods	2,100	26,300	5,000
All softwoods	134,300	1,678,800	468,500
Sugar maple	202,700	2,533,700	659,900
Beech	122,600	1,532,500	307,000
Red maple	100,300	1,253,700	154,300
Red oak	50,300	628,800	151,900
Basswood	43,500	543,700	116,600
Ash	63,900	798,800	95,900
Yellow birch	48,200	602,500	89,600
Black cherry	10,400	130,000	36,400
White oak	10,800	135,000	28,200
Elm	11,200	140,000	18,100
Aspen	12,000	150,000	3,200
Other hardwoods	23,800	297,500	24,100
All hardwoods	699,700	8,746,200	1,685,200
All species[3]	834,000	10,425,000	2,153,700

[1]Includes sawtimber. Cord equivalent in rough standard cords is assumed to average 80 cubic feet of peeled wood.

[2]Log scale, International ¼-inch rule.

[3]Excludes the net volume of cull trees--10,600,000 cubic feet.

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Table 7.--Net volume of live timber on commercial forest land by diameter class, 1949

Diameter class[1] (in inches at breast height)	Growing stock	Saw-timber
	Thousand cu.ft.	Thousand bd.ft.
Softwoods:		
6	13,600	--
8	24,900	--
10	19,200	74,000
12	17,300	79,300
14	14,000	69,800
16	18,200	93,400
18	8,900	47,500
20	5,500	30,100
22	5,000	28,300
24 +	7,700	46,100
All softwoods	134,300	468,500
Hardwoods:		
6	108,600	--
8	130,100	--
10	143,800	--
12	76,700	323,800
14	52,300	259,900
16	40,400	215,900
18	39,200	222,300
20	25,300	149.100
22	30,100	179,000
24	19,700	119,300
26	25,600	165,000
28 +	7,900	50,900
All hardwoods	699,700	1,685,200
Total	834,000	2,153,700

[1] The midpoint of each 2-inch diameter class is indicated.

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Table 8.--Net volume of live timber on commercial forest land by forest type, 1949

Forest type	Growing stock		Saw-timber
	Thousand cu.ft.	Equivalent in cords	Thousand bd.ft.
Hemlock	71,000	887,500	213,400
White pine	24,300	303,800	84,700
White pine-hardwood	16,900	211,200	46,000
Spruce-fir and hardwood spruce-fir	4,700	58,800	10,300
Sugar maple-beech-yellow birch	622,600	7,782,500	1,603,300
Aspen-gray birch and paper birch	10,900	136,200	1,100
Ash-elm-maple and bottomland hardwood	7,900	98,800	22,100
Oak-white pine	33,800	422,500	102,200
Red oak	17,800	222,500	27,600
White oak	17,200	215,000	20,900
Chestnut oak	6,900	86,200	22,100
All types	834,000	10,425,000	2,153,700

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Table 9.--Average net volume of live timber per acre of commercial forest land, by stand-size class, 1949

Stand-size class (and acreage of each class)	Growing stock	Saw-timber
	Cubic feet	Board feet
Sawtimber stands:		
More than 5,000 bd.ft. per acre (154,600 acres)	1,860	8,100
1,500 to 5,000 bd.ft. per acre (265,100 acres)	1,180	2,800
Poletimber stands:		
More than 600 cu.ft. per acre (243,400 acres)	770	500
200 to 600 cu.ft. per acre (76,500 acres)	370	220
Other[1] (111,200 acres)	160	200
Average, all classes[2] (850,800 acres)	980	2,500

[1]Includes seedling-and-sapling stands and non-stocked areas.

[2]Hardwoods constitute 78 percent of the total board-foot volume or 84 percent of the total cubic-foot volume in all stand-size classes. The average cubic volume in all stand-size classes is equivalent to 12 cords per acre.

APPENDIX

DEFINITIONS OF TERMS

Forest Areas

Forest-land area.--Includes (a) lands that are at least 10 percent stocked by trees of any size and capable of producing timber or other wood products, or of exerting influence on the climate or on the water regime; (b) land from which the trees described in (a) have been removed to less than 10 percent stocking and which has not been developed for other use; and (c) afforested areas. (Forest tracts of less than 1 acre, isolated strips of timber less than 120 feet wide, and abandoned fields and pastures not yet 10 percent stocked are excluded.)

Commercial forest-land area.--Forest land that is (a) producing, or physically capable of producing, usable crops of wood (usually sawtimber), (b) economically available now or prospectively, and (c) not withdrawn from timber utilization.

Noncommercial forest-land area.--Forest land (a) withdrawn from timber utilization through statute, ordinance, or administrative order but which otherwise qualifies as commercial forest land, and (b) incapable of yielding usable wood products (usually sawtimber) because of adverse site conditions.

Forest Types

Forest types are classified according to the species or species group that accounts for the major portion of the stand in terms of cubic feet in sawtimber and poletimber stands, or the number of stems in seedling-and-sapling stands.

Stand-Size Classes

Sawtimber stands.--Stands with sawtimber trees having a minimum net volume per acre of 1,500 board feet, International $\frac{1}{4}$-inch rule.

Poletimber stands.--Stands failing to meet the sawtimber stand specification, but at least 10 percent stocked with poletimber and larger (5.0 inches and larger) trees, and with at least half the minimum stocking in poletimber trees. (Poletimber stands carry at least 200 cubic feet per acre.)

Seedling-and-sapling stands.--Stands not qualifying as either sawtimber or poletimber stands, but having at least 10 percent stocking of trees of commercial species and with at least half the minimum stocking in seedling-and-sapling trees.

Other areas.--Forest-land areas not qualifying as sawtimber, poletimber, or seedling-and-sapling stands. (Includes nonstocked areas.)

Tree Classes

Sawtimber trees.--Trees of commercial species that contain at least one merchantable sawlog as defined by regional practice and that are of the following minimum diameters at breast height (d.b.h.): Softwoods 9.0 inches and hardwoods 11.0 inches. (All butt sawlogs are considered merchantable. Where the butt is defective, upper sawlogs are considered merchantable if they account--in terms of aggregate net volume--for 50 percent or more of the gross volume below the top of the uppermost sawlog. Softwood sawlogs are at least 6.0 inches in diameter inside bark at small end; 8 to 16 feet in length; sound and straight enough to be manufactured into standard lumber. The smaller logs are generally free of surface defects other than small tight knots. Hardwood sawlogs are at least 8.0 inches in diameter inside bark at small end; 8 to 16 feet in length; suitable for sawing into standard lumber, construction timbers, or ties.)

Poletimber trees.--Trees 5.0 inches d.b.h. and larger of commercial species that do not meet the specifications for sawtimber trees but do meet regional specifications of species, soundness, and freedom from defect. (These are the trees that are straight and clear enough to make sawtimber trees eventually.)

Seedling-and-sapling trees.--Trees of commercial species less than 5.0 inches in diameter at breast height.

Cull trees.--Live trees of sawtimber or poletimber size that are unmerchantable for sawlogs now or prospectively because of defect, rot, or species.

Timber Volume

Growing stock.--Net volume, in cubic feet, of live sawtimber trees and live poletimber trees from stump to a minimum 4.0-inch top (of central stem) inside bark.

This volume is also given in rough standard cords (bark included). Cord volume is derived from growing stock by applying a factor of 80 cubic feet per cord.

Live sawtimber volume.--Net volume in board feet, International $\frac{1}{4}$-inch rule, of live sawtimber trees.

FOREST-SURVEY METHODS

These forest statistics are based on information gathered from aerial photographs and from sample plots examined on the ground.

First, photo-interpretation plots were marked off on the aerial photographs. These plots were distributed uniformly by mechanical means over photographs of the entire district. Trained photo-interpreters then classified each photo-plot as either forest or nonforest. Forest plots were classified further according to stand-size and forest type.

Field crews inspected some of the photo-plots on the ground. Enough plots were selected at random so as to attain a specified level of statistical accuracy. Species and volume data were collected on these ground plots; and the photo classification of stand size and forest type was verified or--if necessary--changed.

The survey was designed for maximum efficiency in estimating total cubic volume to meet the national standards of accuracy.

ACCURACY OF THE ESTIMATES

The estimates in this report may contain two kinds of error. First, photo-interpreters may make mistakes of judgment and fieldmen may make mistakes in measuring or record-

ing. There is no practical way of finding out just how often such errors occur. But they are kept to a minimum by closely checking all phases of the work.

The second kind of error is associated with sampling procedures. The size of this sampling error can be measured. In Forest District No. 1 the probabilities are 2 out of 3 that the actual forest area is within ± 1.6 percent of the estimated forest area, that the actual cubic-foot volume is within ± 4.8 percent of the estimated cubic-foot volume, and that the actual board-foot volume is within ± 9.7 percent of the estimated board-foot volume. This does not include any mistakes in measurement or classification.

These percentages show that the area estimates are more accurate than the volume estimates, and that the cubic-foot estimates are more accurate than the board-foot estimates.

In each of the tables, the total figures are more accurate than the subtotals. The subtotals are more accurate than any of the individual figures. Figures that are small in relation to totals are subject to larger sampling errors.

SPECIES TALLIED

The various commercial tree species tallied in New York Forest District No. 1 are listed below. Approved common names[3] are shown in parentheses if these differ from the brief name used in the tables. Other tree species may occur in the area, but unless they were tallied on the field plots they were not included in the following list.

Softwoods

Spruce (Red spruce)	- Picea rubens
Hemlock (Eastern hemlock)	- Tsuga canadensis
White pine (Eastern white pine)	- Pinus strobus
(Red pine)	- Pinus resinosa
Other softwoods	
(Northern white-cedar)	- Thuja occidentalis

[3] LITTLE, ELBERT L. JR. CHECK LIST OF NATIVE AND NATURALIZED TREES OF THE UNITED STATES (INCLUDING ALASKA). U. S. DEPT. AGR. AGR. HANDB. 41. 472 PP. 1953.

(Eastern redcedar)	- Juniperus virginiana
(Balsam fir)	- Abies balsamea

Hardwoods

Sugar maple	- Acer saccharum
Red maple	- Acer rubrum
Red oak (Northern red oak)	- Quercus rubra
White oak	- Quercus alba
Yellow birch (Yellow birch)	- Betula alleghaniensis
(Sweet birch)	- Betula lenta
Beech (American beech)	- Fagus grandifolia
Ash	- Fraxinus species
Basswood (American basswood)	- Tilia americana
Aspen	- Populus species
Black cherry	- Prunus serotina
Elm	- Ulmus species
Other hardwoods	
(Chestnut oak)	- Quercus prinus
(Hickory)	- Carya species
(Butternut)	- Juglans cinerea
(Willow)	- Salix species
(Paper birch)	- Betula papyrifera

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